

Remarks

Reconsideration and reexamination of the above-identified patent application, as amended, are respectfully requested. Claims 1-13, 15-31, and 32-42 are pending in this application upon entry of this Amendment. In this Amendment, the Applicant has amended claims 1, 11, 13, 15, 23, 26-29, and 32-42; and cancelled claims 14 and 43. No claims have been added in this Amendment. Of the pending claims, claims 1 and 32-33 are independent claims.

Specification

The Applicant has amended the specification to update the status of the parent application (now abandoned).

Claim Objections

The Examiner objected to claim 13 for the following informality on line 4: “the attributes of the data for the particular data application” lacks clear antecedent basis. The Applicant has amended claim 13 to properly depend from claim 11 which provides the proper antecedent basis for the noted phrase.

Claim Rejections - 35 U.S.C. § 112

The Examiner rejected claims 1-43 under 35 U.S.C. § 112, 1st paragraph. The Examiner posited that the specification while being enabling for (claims 1 and 32-33) providing desired data storage attribute irrespective of perhaps certain attributes of the physical storage devices, does not reasonably provide enablement for the desired attribute irrespective of physical device attributes in general, as the claim language can be broadly interpreted. The Examiner further posited that the specification does not enable one skilled in the art to make and/or use the invention commensurate with these claims. More particularly, the Examiner

indicated that the claims recite only that the physical devices have attributes, and that the desired attribute is irrespective of those; it is not apparent how the disclosure enables providing a desired attribute when the physical devices might have any such attributes, such as a low capacity or speed, etc. Further, the Examiner indicated that paragraph 0056 implies, by citing certain storage devices that the invention supports, that there are specific attributes that must be met for the invention to function correctly. The Examiner thus posited that, therefore, the providing of a desired attribute is not irrespective of the physical storage attributes. The Examiner noted that claims 2-31 and 34-43 incorporate the respective limitations of their independent claims and are rejected for the same reason.

The Applicant has amended the claims to address the rejection thereof under 35 U.S.C. § 112, 1st paragraph. Accordingly, the Applicant respectfully requests reconsideration and withdrawal of the rejection to the claims under 35 U.S.C. § 112, 1st paragraph.

Claim Rejections - 35 U.S.C. § 102

The Examiner rejected claims 1-43 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,394,532 issued to Belsan ("Belsan"). The Examiner rejected claims 1-43 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,330,621 issued to Bakke et al. ("Bakke"). The Applicant believes that the claimed invention is patentable over both Belsan and Bakke and has amended independent claims 1 and 33 to more clearly define the claimed invention.

1. The Claimed Invention

The claimed invention is generally directed to a data storage system (as set forth in amended independent claims 1 and 32) and a data storage method (as set forth in amended independent claim 33) for storing and retrieving data for a host processor.

As set forth in representative amended independent claim 1, the data storage system includes a plurality of different types of physical data storage devices (PDSDs). Each PDSD has data storage attributes. The data storage attributes of the PDSDs differ from one another based on the types of the physical storage devices. An outboard storage manager is operable with the PDSDs for presenting to the host processor a virtual data storage image (VDSI) having a desired data storage attribute for a particular data storage application by combining at least some of the PDSDs, based on the data storage attributes of the PDSDs, in an arrangement suitable for providing the desired data storage attribute such that the combined PDSD arrangement emulates the VDSI. The manager includes interim storage. The manager stores in the interim storage data received from the host processor via the VDSI and then transfers the data from the interim storage to the PDSDs of the combined PDSD arrangement. The manager stores in the interim storage data received from the PDSDs of the combined PDSD arrangement and then transfers the data from the interim storage to the host processor via the VDSI.

2. The Claimed Invention Compared to Belsan

The claimed invention generally differs from Belsan in that the claimed includes a plurality of different types of PDSDs which have differing data storage attributes based on their PDSD type and different types of the PDSDs are combined in a PDSD arrangement to emulate a VDSI. In contrast, Belsan discloses a data storage system having the same type of PDSDs (namely, disk drives).

Accordingly, the Applicant believes that the claimed invention as set forth in amended independent claims 1 and 32-33 is patentable over Belsan. Claims 2-13 and 15-31 depend from amended independent claim 1 and include the limitations therein. Claims 34-42 depend from amended independent claim 33 and include the limitations therein. Thus, the Applicant respectfully requests reconsideration and withdrawal of the rejection to the claims under 35 U.S.C. § 102(b) in view of Belsan.

3. The Claimed Invention Compared to Bakke

The claimed invention generally differs from Bakke in that in the claimed invention interim data received from the host processor via the VDSI is stored in interim storage and then transferred from the interim storage to the PDSDs of the combined PDSD arrangement; and, conversely, data received from the PDSDs of the PDSD arrangement is stored in the interim storage and then transferred from the interim storage to the host processor via the VDSI. As disclosed in the paragraph beginning on page 12, line 11 of the Applicant's specification, a purpose of the interim storage is to act as a temporary staging area when speed matching or masking of data transferred between the host processor and the PDSD arrangement via the VDSI is needed. Bakke does not teach or suggest using such interim storage in this manner.

Accordingly, the Applicant believes that the claimed invention as set forth in amended independent claims 1 and 32-33 is patentable over Bakke. Claims 2-13 and 15-31 depend from amended independent claim 1 and include the limitations therein. Claims 34-42 depend from amended independent claim 33 and include the limitations therein. Thus, the Applicant respectfully requests reconsideration and withdrawal of the rejection to the claims under 35 U.S.C. § 102(e) in view of Belsan.

Double Patenting

The Examiner rejected claims 1-43 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of U.S. Patent No. 6,094,605 issued to Blendermann et al. ("Blendermann").

The claimed invention as set forth in the amended independent claims is generally different than Blendermann as the claimed invention includes combining different types of PDSDs in an arrangement suitable for emulating a VDSI and then transferring data between a host processor and the PDSDs in the PDSD arrangement via the VDSI and interim

storage. Claims 1-9 of Blendermann are generally directed to arranging interim storage to emulate a data storage device compatible with a user allocation request irrespective of an actual type of storage device used as at least one PDSD. As such, the Applicant believes that the claimed invention is not an obvious variation over the claims of Blendermann. Accordingly, the Applicant respectfully requests reconsideration and withdrawal of the rejection to the claims on the ground of nonstatutory obviousness-type double patenting in view of Blendermann.

CONCLUSION

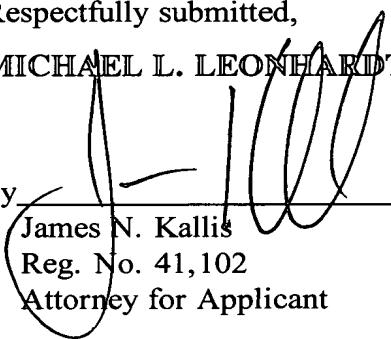
In summary, claims 1-13 and 15-42, as amended, meet the substantive requirements for patentability. The case is in appropriate condition for allowance. Accordingly, such action is respectfully requested.

If a telephone or video conference would expedite allowance or resolve any further questions, such a conference is invited at the convenience of the Examiner.

Respectfully submitted,

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